cannot afford to keep him at college pays his way either by working during the long vacation in all sorts of manual employment or by rendering what we should regard as menial services to his fellow-students during term time, much like the old "servitors" at Oxford and Cambridge. Nor does this create any social barrier. At one university visited by some of my Mosely colleagues they were waited upon during the college dinner by some very intelligent looking young fellows, and found on inquiry that these were students. Somewhat surprised at this, one of the party asked if this would not tell against them socially. "Not in the least," was the answer. "That man over there is president of one of the chief debating societies; that other is one of our best athletes and much looked up to." It is the same in the women's colleges. At Vassar one girl keeps a bicycle cleaning shop; they act as room-tidiers, clean shoes, &c. In Canada I was informed that at Queen's University, Kingston, no less than 70 per cent. of the men students earn their fees and maintenance for the coming session by working through the summer on farms, on the railway, in mines, river steamboats, &c. The fact is, the Transatlantic youth is rather proud of being able to earn his own living; it makes him feel himself more of a man, and it is not at all uncommon for the son of rich parents to take work in this way for the sense of independence it brings. It is a fine spirit, and makes one blush when one thinks how very different a reception such conduct would probably meet with over here.

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The committee for the supervision of instruction in geography has appointed Dr. A. J. Herbertson, director of the school of geography, for the remainder of the term of five years for which the grants to the school of geography have been voted. A syllabus of the examination for the diploma in this subject has been issued, which includes regional geography, climatology and oceanography, geomorphology, historical geography, and surveying.

The delegates of the common university fund have elected Mr. G. W. Smith, New College, to the biological scholarship at Naples for the year 1905–6.

Mr. M. H. Godby has been elected to a Dixon research scholarship in chemistry at Christ Church.

CAMBRIDGE.—An interesting insight into the way the university is governed is given by the following figures. A careful analysis of the poll-book of the recent vote on "compulsory" Greek gives the following results:—(1) Of the residents, 288 voted in favour of the recommendation that Greek should no longer be compulsory in the previous examination; 240 voted against the recommendation—majority of residents in favour of the recommendation, 48. (2) Of the total number of members of the senate who voted, residents and non-residents included, 1591 were laymen, 1021 were clergymen. Of the laymen, 923 voted in favour of the recommendation; 668 voted against it—majority of laymen in favour of the recommendation, 255. Of the clergymen, 132 voted in favour of the recommendation; 889 voted against it—majority of clergymen against the recommendation, 757.

The report on the proposed diploma of forestry was discussed on Thursday, November 2. Among the speakers were the professor of geology, the professor of botany, the secretary of the financial board, and the master of Gonville and Caius College. The proposal was warmly welcomed.

The State medicine syndicate reports that last year seventy-one candidates presented themselves for the diploma in public health, and that twenty-four candidates entered for the diploma in tropical medicine and hygiene, sixteen of whom were successful.

The following have been nominated examiners for the natural science tripos in 1906:—in physics, Mr. R. T. Glazebrook and Mr. C. T. R. Wilson; in chemistry, Mr. H. O. Jones, and Mr. H. B. Baker, Oxford; in mineralogy, Prof. Lewis, and Mr. H. L. Bowman, Oxford; in geology, Mr. P. Lake and Dr. F. A. Bather; in botany, Mr. A. C. Seward, and Mr. A. G. Tansley, of University College, London; in zoology, Mr. A. Sedgwick, and Prof. MacBride, of Montreal; in physiology, Mr. W. M. Fletcher, and Prof. T. G. Brodie, of the Brown Institute; in human anatomy, Dr. Barclay Smith, and Dr. A. Robinson, of Birmingham University.

The Vice-Chancellor announces that Sir Archibald Geikie will, on behalf of the board of geographical studies, deliver a public lecture in the Sedgwick Museum on November 21, at 5 p.m., on "The Evolution of a Landscape." On the evening of the same day, and at the same place, Dr. C. Hose, of Sarawak, will lecture on Borneo.

The next combined examination for sixty-two entrance scholarships and various exhibitions at Pembroke, Gonville and Caius, King's, Jesus, Christ's, St. John's, and Emmanuel colleges will be held on Tuesday, December 5, and following days, commencing at 9 a.m. on December 5. Mathematics, classics, and natural sciences will be the subjects of examination at all the above-mentioned colleges. Scholarships and exhibitions will also be offered for history, for modern languages, and for Hebrew at some of the colleges. A candidate for a scholarship or exhibition at any of the seven colleges must not be more than nineteen years of age on October 1, 1905. Forms of application for admission to the examination at the respective colleges may be obtained as follows:—Pembroke College, Mr. W. S. Hadley; Gonville and Caius College, the Master; King's College, Mr. W. H. Macaulay; Jesus College, Mr. A. Gray; Christ's College, Rev. J. W. Cartmell; St. John's College, Dr. Donald MacAlister, Dr. J. R. Tanner, Mr. E. E. Sikes; Emmanuel College, the Master; from any of whom further information respecting the scholarships and other matters connected with the several colleges may be obtained. The forms of application must be sent in on or before Tuesday, November 28.

MR. F. S. PINKERTON has been appointed professor of applied mathematics at the University College of South Wales, Cardiff.

BY the will of Mr. J. E. Williams, of Chester, who died on July 15, a legacy of 10,000*l.* is bequeathed to the University of Wales, the income to be used in founding new scholarships and prizes in his name, to be held upon certain terms and conditions. In the event of the University of Wales not accepting the legacy within six months, the same is to be paid to the trustees of the University College of North Wales at Bangor upon the same conditions. He also bequeathed 10,000*l.* to the University College of North Wales at Bangor upon the same conditions, and 2000*l.* for the building fund of this college.

AT the last meeting of the council of the University of Birmingham, the Vice-Chancellor (Alderman C. G. Beale) in the chair, the Chancellor (Mr. Chamberlain) announced that a friend of the university, who desired to remain anonymous, had promised a donation of 50,000*l.*, the amount to be applied towards the completion of the new buildings at Bournbrook. The council desired the Chancellor to convey its best thanks to the generous donor for his munificent gift. This is the fourth amount of 50,000*l.* already contributed to the university endowment fund, the other sums having been received from Mr. Andrew Carnegie, Sir James Timmins Chance, and an anonymous donor. The total fund is about 450,000*l.*, to which must be added annual contributions from the City Council (6000*l.* per annum), and 500*l.* each from the county councils of Staffordshire and Worcestershire. The council has already approved of expenditure upon the site and buildings amounting to about 280,000*l.*, in addition to upwards of 80,000*l.* on equipment. It is hoped that a formal opening of the new buildings may be possible in about eighteen months' time.

THE Board of Education has issued the following list of candidates successful in this year's competition for the Whitworth scholarships and exhibitions:—(1) *Scholarships*, 125*l.* a year each (tenable for three years): H. Topham Grantham; C. W. Price, Devonport; W. F. Paffett, Portsmouth; R. W. Bailey, Goodmayes (Essex). (2) *Exhibitions*, 50*l.* (tenable for one year): W. White, Southsea

A. E. Humber, Portsmouth; G. Lees, Southsea; A. Ward, London; A. W. Sawyer, London; C. E. G. House, Chatham; H. Schofield, Halifax; J. M. Robertson, Pembroke Dock; W. E. G. Sillick, Devonport; J. A. Cormack, Glasgow; F. Clements, Chesterfield; B. J. Cole, Devonport; P. W. M. Sparey, London; S. Lees, Manchester; B. H. Penn, Bedford; W. H. Stock, Swindon; W. R. Sinclair, Newcastle-on-Tyne; M. Bell, Bensham, Gateshead; T. H. Essery, Devonport; S. H. Warren, Devonport; A. R. Valon, London; G. R. Wilkinson, Oldham; A. D. Johnston, jun., South Shields; W. C. A. Bowles, London; A. L. Bird, Cambridge; T. N. Adlam, Trowbridge; J. Bedford, Chingford; P. P. Smart, Wolverton; C. L. Gransden, Chatham; W. F. Brown, Birkenhead.

THE following list of successful candidates in this year's competition among science students for Royal exhibitions, national scholarships and free studentships has been issued by the Board of Education:—*Royal exhibitions:* Arthur B. Middleton, Bradford, Manchester; William White, Southsea; Alfred E. Humber, Portsmouth; George Lees, Southsea; Frederick E. Pollard, Eastwood, Notts; James L. Kent, Portsmouth; Frank Fielden, Halifax. *National Scholarships for Mechanics (Group A):* Arthur T. Wall, Plymouth; Arthur Cannon, Plymouth; William E. Dommett, Southsea; Herbert J. London, London; Charles E. G. House, Chatham; William E. G. Sillick, Devonport. *Free Studentships for Mechanics (Group A):* Charles L. Gransden, Chatham; Harford G. Stephens, Leicester. *National Scholarships for Physics (Group B):* John M. Strang, Glasgow; Frederick Reid, Glasgow; John W. Waters, Chatham; Dudley Orson-Wood, Chiswick; George F. Hemens, London; William F. Higgins, London; Walter C. M. Pettingill, Leeds. *Free Studentships for Physics (Group B):* Frederick J. Harlow, Whitstable; Edward F. Pattenden, Whitstable. *National Scholarships for Chemistry (Group C):* Harry F. V. Little, London; Tom Thornley, Blackburn; Samuel Lamb, Bradley, Bilston; Alan C. Webber, Brighton; John H. Jennings, Plymouth; Robert O'F. Oakley, London. *Free Studentships for Chemistry (Group C):* Archibald Wise, Plymouth; Charles S. Garland, London. *National Scholarships for Geology (Group E):* John W. Maxfield, Burnley; Ernest Proctor, Burnley; James Mitchell, Burnley.

THE annual general meeting of the Association of Teachers in Technical Institutes was held at the Birkbeck College, London, on November 4. The association, which was founded a year ago, already has a membership of 300 exclusive of the Association of Teachers of Domestic Sciences, which is affiliated with it. Mr. W. J. Lineham, the president, was in the chair, and moved the adoption of the report of the council, which was subsequently agreed to. The council recommends in the report that meetings of teachers in provincial technical institutes be called to lay the claims of the association before them directly. A resolution was passed instructing the council to call meetings of the teachers in provincial technical institutes and to consider the following matters with full powers to act therein:—(*a*) The formation of local or provincial branches of the association; (*b*) joint action or federation with the West Riding Association of Teachers of Science, Art, and Technology, the Federation of London Teachers, and other bodies of teachers. One of the most important matters discussed during the year has been the registration of teachers. A scheme has been drawn up by the council, and a circular has been issued to members pointing out its importance upon the future *status* and professional position of teachers in technical institutes. A scheme for registration has already been formulated by the teachers of domestic science. The council recommends that steps be taken at an early date, by deputation or otherwise, to urge upon public examining authorities the importance of securing closer connection between the examiner and the teacher. Various amendments to the constitution and rules were decided upon, and the title of the association was changed to that of "The National Association of Teachers in Technical Institutes," and it was resolved that its officers be a president, two vice-presidents, an hon. secretary, and an hon. treasurer. Mr. Lineham was elected president for the ensuing year.

## SOCIETIES AND ACADEMIES.

### LONDON.

**Physical Society,** October 27.—Prof. J. H. Poynting, F.R.S., president, in the chair.—The theory of phasemeters: Dr. W. E. **Sumpner.** The author shows in the paper that the theory of the instruments is the same whether they contain iron or not, and however the coils may be arranged; that they can be calibrated by direct-current methods, although for use on alternating-current circuits; and that a new type of instrument, containing iron, conforms to the theory given. The main results of the investigation are:—(1) Phasemeters for multi-phase circuits are all equally accurate on balanced loads provided they have been correctly calibrated and possess no faults due to purely mechanical causes. Their accuracy is not affected by variations in wave-form or in current-frequency. (2) Phasemeters can be simply and accurately calibrated for balanced loads by means of a direct-current method of test. (3) The error of phasemeters on unbalanced circuits is generally serious for loads which are badly out of balance. The error, like that of a wattmeter, increases rapidly as the power-factor of the load diminishes. It can only be reduced at the expense of complication in the instrument, by increasing the number of coils used in the fixed and moving systems, and by arranging the coils and magnetic circuits to be symmetrical in regard to one another.—Apparatus designed for measuring the coronal radiation during an eclipse: Prof. H. L. **Callendar.** A preliminary test of the apparatus with the thermopile directly exposed to radiation of known intensity showed a deflection of nearly 25 cm. for one-thousandth of a calorie per sq. cm. per min., so that radiation one-millionth of full sunshine could be detected with certainty without using a mirror. When placed in the focus of the telescope used, radiation one thousand times smaller than this could be observed, so that even if the intrinsic heat-radiating power of the corona were only one ten-millionth of the solar surface it could still be measured to within 1 per cent. The essential point in the observations was to eliminate the variable effects of atmospheric radiation, for which a differential method of observation with the two halves of the pile was particularly suitable. In taking observations on the corona, the motion of the moon during totality was made use of to define the exact area of the corona corresponding to the differential reading. At the commencement of totality, the thermopile being centred on the sun, the inner corona on the eastern limb would be fully exposed, while on the western it would be partly covered by the moon. At the end of totality the reverse would be the case. The difference of the readings would correspond to the radiation of the strip of the inner corona uncovered by the motion of the moon between the two readings. The area of the strip of corona considered could be accurately determined from the times at which the readings were taken.

### PARIS.

**Academy of Sciences,** October 30.—M. Troost in the chair.—Two hæmatozoa of the partridge and turkey: A. **Laveran** and M. **Lucet.** The first of these was the cause of the death of 97 out of 100 Hungarian partridges imported into France. Its appearance and mode of division corresponded with *Haemamoeba relicta,* a parasite which has been known to be responsible for epidemics in many birds, but not hitherto of the partridge. The other parasite, found to be the cause of perityphlo-hepatitis in the domestic turkey, appears to belong to a new species, and is named *Haemamoeba Smithi.*—A criterion for the application of the Gompertz-Makeham mortality law: Charles **Goldziher.** The application of this law depends absolutely on the regularity of the original series, but, so far, an exact criterion for the exactitude of the limits between which this application is possible has been wanting. This is worked out in the present paper.—On the composition of the hydrochloroferric colloid with respect to the amount of hydrochloric acid present in the suspending liquid: G. **Malfitano.** By increasing the concentration of the medium in hydrochloric acid, the colloid tends to approximate to the composition $H(Fe_2O_6H_6)Cl$.—Observations relating to some india-rubber plants: A. **Chevalier.** Whatever may be the family to which a caoutchouc belongs, its richness